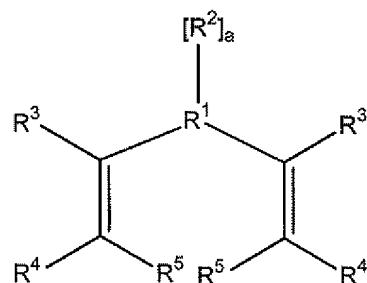


## Patent claims

1. Poly(vinyl alcohol) copolymers on the basis of poly(vinyl ester) copolymers which are obtained by means of a method comprising the following steps:
  - 5 A) Radical solution or bulk polymerization of vinyl esters in the presence of a radical generator and in the presence of a radical scavenger.
  - B) Addition of a cross-linking polyalkenyl compound,
  - C) if necessary, processing and isolation of the poly(vinyl ester) copolymers formed,
  - 10 D) saponification of the poly(vinyl ester)/poly(vinyl ester-polyalkene) mixture prepared in step B) or of the poly(vinyl ester-polyalkene) copolymers isolated under step C) with a base to form the poly(vinyl alcohol)/poly(vinyl alcohol-polyalkene) mixtures or poly(vinyl alcohol-polyalkene) copolymers, respectively, and isolation of the products.
- 15 2. Poly(vinyl alcohol) copolymers according to claim 1, characterized in that the radical generators in step A) are peroxide compounds.
3. Poly(vinyl alcohol) copolymers according to claim 1 or 2, characterized in that the radical generators are used in amounts of 0.05 – 10 mmol per mole of vinyl acetate.
- 20 4. Poly(vinyl alcohol) copolymers according to claim 1, characterized in that the radical scavengers in step A) are phosphoric acid esters.
- 25 5. Poly(vinyl alcohol) copolymers according to claim 1 or 4, characterized in that the radical scavengers are used in amounts of 0.5 – 10 mol per mole of radical initiator.
- 30 6. Poly(vinyl alcohol) copolymers according to claim 1, characterized in that the polyalkenyl compounds used in step B) are compounds of the formula I:



Formula I

5 where:

R<sup>1</sup> is a C<sub>6</sub> – C<sub>20</sub> – aryl group, a C<sub>5</sub> – C<sub>20</sub> – heteroaryl group, a C<sub>4</sub>-C<sub>20</sub>-cycloalkyl group, a C<sub>4</sub>-C<sub>20</sub>-heterocycloalkyl group or a C<sub>1</sub> – C<sub>20</sub> – alkyl group, in which one or several not directly neighboring C-atoms may be substituted by an element of the 5. or 6. group of elements, preferably nitrogen, phosphorous, oxygen or sulfur, particularly preferably nitrogen or oxygen, and

10 R<sup>2</sup> is equal or different, and is hydrogen, oxygen, sulfur or a hydroxy group, a carbamoyl group, an amino group, a carboxy group, a C<sub>1</sub> – C<sub>20</sub>-alkylcarbonyl group, a C<sub>1</sub> – C<sub>20</sub>-alkyloxy group, a C<sub>6</sub> – C<sub>20</sub>-aryloxy group, an imino group, a C<sub>1</sub> – C<sub>20</sub>-alkylimino group, a C<sub>6</sub> – C<sub>20</sub>-alkylimino group, a cyano group, a C<sub>1</sub> – C<sub>20</sub> – alkyl group, a C<sub>6</sub> – C<sub>20</sub> – aryl group, a C<sub>5</sub> – C<sub>20</sub> – heteroaryl group, a C<sub>4</sub>-C<sub>20</sub>-cycloalkyl group, a C<sub>4</sub>-C<sub>20</sub>-heterocycloalkyl, a C<sub>7</sub> – C<sub>20</sub>-alkylaryl group, a C<sub>7</sub> – C<sub>30</sub>-arylalkyl group, a C<sub>2</sub> – C<sub>20</sub>-alkenyl group, a C<sub>2</sub> - C<sub>20</sub>- $\alpha$ -oxyalkenyl, a halogen containing C<sub>1</sub> – C<sub>20</sub> – alkyl group, a C<sub>6</sub> – C<sub>20</sub> – aryl group, a C<sub>7</sub> – C<sub>20</sub> – alkylaryl group, a C<sub>7</sub> – C<sub>30</sub>-arylalkyl group or a C<sub>2</sub> – C<sub>20</sub>-alkenyl group, and

15 R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> are equal or different, and is hydrogen or a C<sub>1</sub> - C<sub>20</sub> – carbon containing group, and

a is a natural integer from 0 to 40.

20 7. Poly(vinyl alcohol) copolymers according to claim 1, characterized in that the polyalkenyl compounds used in step B) are used in amounts of 0.0005 – 1 mol per mole of vinyl acetate.

25 8. Use of the poly(vinyl alcohol) copolymers according to claim 1 to 7 in painting agents, in adhesives, in finishing agents, in coating agents, as additives in papermaking, as lacquer component, as protective colloid, emulsifier, as binding agent, for protective coatings (films), in sizing agents, in metal protection coatings, for the production of ointments and emulsions, in water-

soluble bags and packaging films, in oil-, fat- and fuel-resistant films, in hoses and seals, as shaving cream additive and soap additive, as thickening agents in pharmaceutical and cosmetic preparations, as synthetic tear fluid, in water-soluble fibers or sponges, in films, as cement additive, in hydrogels for water treatment and as poly(vinyl alcohol) processable in the melt.